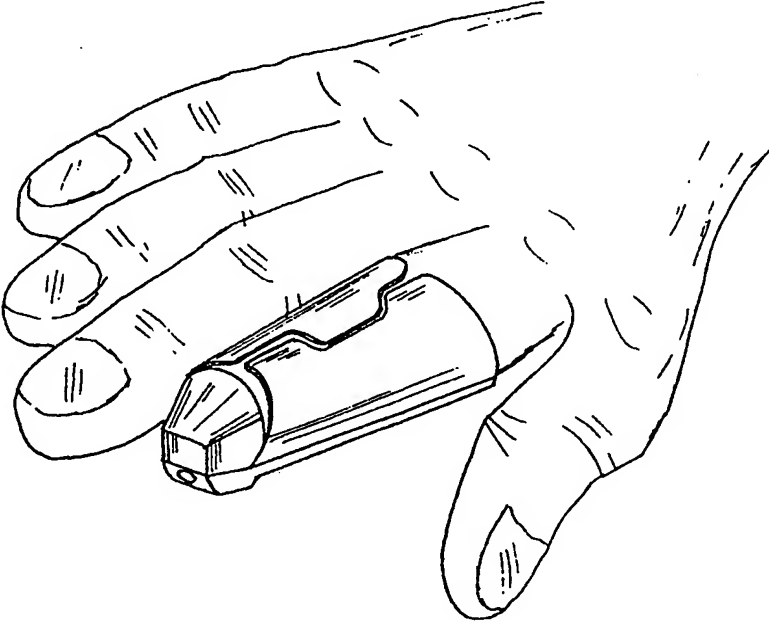




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(21) International Application Number: PCT/NZ99/00125 (22) International Filing Date: 6 August 1999 (06.08.99) (30) Priority Data: 331277 6 August 1998 (06.08.98) NZ (71)(72) Applicant and Inventor: BEESLEY, John, Arthur [GB/NZ]; 3 Darlington Terrace, Miramar, Wellington (NZ). (74) Agents: HAWKINS, Michael, Howard et al.; Baldwin Shelston Waters, NCR Building, 342 Lambton Quay, Wellington (NZ).		(81) Designated States: AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>	
(54) Title: WRITING IMPLEMENT			
			
(57) Abstract			
<p>A writing implement for securement to the finger (50) of a user. The writing implement includes a body (1; 20) having a writing element (13; 41) secured thereto. Wings (8, 9; 21, 22) are provided which are biased inwardly to secure the writing element to the finger of a user. A slidable mechanism (30, 40) may facilitate opening and closing of wings (21, 22). The slidable mechanism (30, 40) may be latched in a writing position and biased to the non-writing position when released.</p>			

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WRITING IMPLEMENT

The Technical Field

5

This invention relates to a writing implement beneficial for people who suffer from arthritis or other movement inhibiting afflictions which make writing with a conventional implement difficult. In particular, the invention relates to a writing implement which can be attached to a finger of a writer.

10

Background of the Invention

15

Conventional pens are generally tubular in shape and are held by the thumb, index finger and second finger and use requires the intricate and controlled movement of these fingers and thumb. This, however, can cause degrees of pain for people with arthritis or occupational overuse syndrome (OOS) and therefore limits the amount which they can write.

20

A conventional finger pen is described in US-A-4986682. A hollow rod receives a user's fingertip and a retractable nib extends from the tip of the hollow rod. A problem with this construction is that the hollow rod can easily be dislodged and requires muscular tension from the user's finger. Also, the rod can only receive a limited range of finger sizes. This pen provides no adjustment for varying finger sizes and would require a certain physical strength to avoid rocking at the first finger joint.

25

Disclosure of the Invention

5 The object of the present invention is to provide a writing implement that allows easier use for people who have limited movement in their fingers, or to at least provide the public with a useful choice.

10 According to the present invention there is provided a writing implement adapted to receive a writing element, comprising securing means which provides a resilient biasing force on a finger of a user in use which is sufficient to secure the writing implement to the user's finger whilst the writing element is used to write.

15 The securing means ensures that the writing implement is securely attached with minimal discomfort to the user. A wide range of finger sizes can be accommodated.

20 The writing element may be permanently attached to the implement, or may be removable. A variety of writing elements may be used, eg. a graphite rod or a conventional ball-point nib and reservoir.

25 The securing means may comprise a resilient rubber sleeve which fits snugly onto the user's finger. Alternatively the securing means may comprise a securing member which is movably mounted to a base so as to move (eg. by sliding or rotating) between a closed position in which the securing member(s) apply the resilient biasing force to a user's finger, and an open position in which the user's finger can be removed from the writing implement.

The securing means may comprise a pair of flaps which are rotatably mounted to the base. In one embodiment the flaps are mounted on two-position hinges which bias the flaps towards open and closed positions on either side of a neutral position. In a second
5 embodiment the flaps are only biased towards their closed position.

In a preferred embodiment the or each securing member is integrally formed with the base and rotatable about a biased hinge.

10 The biasing force may be entirely provided by a separate spring (eg. a coil spring). Alternatively each hinge may be formed so as to resiliently bias a respective securing member towards its closed position.

15 The writing element may be fixed in an extended writing position. However preferably the writing implement comprises a body; and a support movably mounted to the body and adapted to receive the writing element, wherein the support is movable in an axial direction from a retracted non-writing position to an extended position in
20 which, in use, a tip of the writing element protrudes from the body to facilitate writing. This enables the writing element to be retracted to the non-writing position in a similar manner to a conventional retractable pen or pencil. Preferably the support is moved in both directions by the user's writing finger, by engaging a button.

25

The securing means may be manually held against the biasing force to permit the user's finger to be removed. However, in this case, once the finger has been removed the securing means will return to its closed position. Therefore in a preferred embodiment retaining

means is provided for retaining the securing means against the resilient biasing force in an open position in which the user's finger can be removed from the writing implement. This ensures that the securing means remains in its open position when the writing
5 implement is not in use, ready for the next use.

In a particularly preferred case the support for the writing element retains the securing means in the open position against the resilient biasing force when the support is in its retracted position. Thus
10 when the support is moved to its extended position, the securing means is released to secure the finger.

Brief Description of the Drawings

15 The invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1: is a top view of a writing implement according to a first embodiment;

20

Figure 2: is a bottom view of the first embodiment;

Figure 3: is a cross-sectional view through A-A in Figure 1;

25

Figure 4a: is a cross-sectional through B-B in Figure 1 when the writing implement is in use;

Figure 4b: is a cross-sectional through B-B in Figure 1 when the writing implement is not in use;

Figure 5: is a perspective view of the writing implement of Figure 1 in use;

- 5 Figure 6: shows an exploded top perspective view of a writing implement according to a second embodiment.

Figure 7: shows an exploded bottom perspective view of the writing implement shown in figure 6.

10

Figure 8: shows a schematic cross-sectional view of the writing implement of figures 6 and 7 when the writing element is in the retracted position.

- 15 Figure 9: shows a schematic cross-sectional view of the writing implement shown in figure 8 when a user advances the writing element into the writing position.

20 Figure 10: shows a cross-sectional view along the section A-A shown in figure 6.

Figure 11: shows a cross-sectional view along the line B-B of the writing implement shown in figure 6.

- 25 Figure 12: shows a cross-sectional view along the line C-C of the writing implement shown in figure 6.

Figure 13: shows a cross-sectional view along line A-A of the writing implement shown in figure 6 when the flaps are closed in use.

5 Figure 14: shows a cross-sectional view along line B-B of the writing implement shown in figure 6 when the flaps are closed in use.

Figure 15: shows a cross-sectional view along the line C-C of the writing implement shown in figure 6 when the flaps are closed in
10 use.

Figure 16: shows a top view of the assembled writing implement.

Detailed Description of the Drawings

15

Figures 1 to 5 show a writing implement according to a first embodiment of the invention. The writing implement has an elongate base portion 1 with curved securing members 2 and 3 extending from the sides of the base 1. These securing members 2
20 and 3 fold in use about a writer's finger to secure the writing implement thereto.

Securing member 2 has a fin 9 and is shaped to cooperatively engage with recess 8 in securing member 3. The fin 9 and recess 8
25 allow maximum movement of the securing members 2 and 3 towards each other to provide a snug fit of the writing implement on the finger of a writer.

The writing implement has an end portion 5 which functions as a stopper to prevent longitudinal movement of a finger of a writer when in use. The end portion 5 is shown tapered to provide a good fit on the end of the finger and for ease of use, particularly if the writer is also using a keyboard.

The elongate base 1 has a cavity 4, as shown in Figure 3, for receiving a writing element having a nib or tip 13. As best seen in Figure 2, a slot 7 is located in the underside of the base 1 to accommodate a button for extending or retracting the writing element by manually sliding the button within the slot 7.

The securing members 2 and 3 are shown in Figures 4a and 4b attached to the base 1 by hinges 10. The hinge 10 provides a biasing force on a finger of the writer sufficient to secure the writing implement to the finger during writing.

The hinges 10 are a snap lock hinge of a type used on a variety of injection moulded plastic articles which biases the members 2 and 3 inwardly.

The hinges 10 and the securing members 2 and 3 are constructed so that when the writing implement is not in use and has been removed from the writer's finger, the securing member 2 folds down across securing member 3 so that the writing implement is compact as shown in Figure 4b.

A space 11 may be provided between the securing members 2 and 3 and the end portions, as shown in Figure 3, to accommodate the

first joint of the writer's finger. This reduces unnecessary pressure on sensitive areas of the writer's finger. The base 1 and securing members 2 and 3 may include a liner or cushioning made from a material such as thin foam rubber to further minimise discomfort at
5 extremely pressure sensitive areas of the writer's finger.

The base 1 has a projection 6 and an aperture 12. In use, the tip 13 of a writing element housed in the cavity 4 protrudes from the aperture 12 to allow writing. When the tip 13 of the writing element
10 is retracted, the surface of the projection 6 provides a striking surface for keyboard use.

The writing implement can be decorated and include means for attachment to clothing. It is preferable that the materials used for
15 construction of the writing implement and the surfaces of the writing implement allow labelling to provide a convenient means of identification. It is also preferable that the writing implement is constructed to enable shortening of the length of the writing
20 implement by breaking off a section of the non-writing end to suit small fingers. Suitable score lines may be formed to allow sections of predetermined shape to be removed.

The writing implement is preferably made from a material, such as a plastics material, which is rigid, of light weight and has a degree of
25 flexibility.

A typical writing element for use with the writing implement includes an ink cartridge and a tip which can be extended from the aperture 12 in projection 6. The cavity 4 is shaped to accommodate a

permanently fixed ink cartridge or in another embodiment the cavity 4 may accommodate a replaceable ink cartridge.

5 The tip of the writing element can be extended or retracted by means of a mechanism such as a sliding button located on the underside of the elongate portion 1 and should require minimum effort. The tip will ideally automatically retract when the writing implement is removed from a finger.

10 A second embodiment is shown in figures 6-15. The implement is formed in four parts shown in the exploded perspective view of Figures 6 and 7. The main part 19 comprises a base 20 integrally formed with a pair of flaps 21,22, each connected to the base 20 by a respective hinge 24a, 24b. The part 19 is formed with v-shaped indentations 23a, 23b on its upper face running axially along the
15 length of the part 19. Integrally formed v-shaped springs 24a, 24b are formed on the lower face below slots 27a, 27b. Curved retaining arms 25a, 25b lie within complementary recesses 26a, 26b in the base 20.

20

An actuating assembly 30 is received in a groove in the upper face of the base 20 defined by a pair of shoulders 31,32. The assembly
30 comprises a button 33 with a depression 34 shaped to receive the tip of a user's finger, and a pair of arms having inwardly facing
25 lugs 36. The button 33 has an arm 38 (see figure 7) which extends downwardly through a slot 39 in the base 20.

An end cap 35 is provided with lugs 28a and 28b (see figure 16) which are received within corresponding recesses 20a and 20b at

Hinges 24a and 24b are constructed so that they apply an inwards
biasing force to flaps 21 and 22. Inwards rotation of flaps 21 and
22 is restrained by support member 40, when in the retracted
position. Support member 40 has inclined wings 29a and 29b
which extend through slots 26a and 26b and, when advanced,
through slots 37a and 37b. Wings 29a and 29b abut against arms
25a and 25b to prevent rotation of flaps 21 and 22 when in the
retracted position. When support member 40 is moved to the
writing end of the implement wings 29a and 29b no longer abut
arms 25a and 25b and flaps 21 and 22 may rotate inwardly about
the finger of a user. Support member 40 has gradually inclined
wings 29a and, 29b which force arms 25a and 25b inwardly as
support member 40 is retracted, thus causing flaps 21 and 22 to

open. Support member 40 is biased away from end 19 by spring 52.

5 In use, as shown in Figure 8, the tip of a user's finger 50 is placed in the depression 34 and the user slides the button 33 forwards as indicated at 51 in figure 8, whilst holding the main part 19 with the other hand. The actuating assembly 30 slides forwards along the groove in the base 20, and the support member 40 is driven forward by arm 38 until wings 29a and 29b reach the end of slots 37a and 10 37b. End cap 35 is pivotally rotated upwards to the position shown in figure 9 by the arms having lugs 36 which engage in slots 53.

15 In the retracted position shown in figures 8 and 10-12 wings 29a and 29b abut the retaining arms 25a and 25b so that the flaps 21,22 are retained against the biasing force of the springs 24a and 24b in their flat open position. When the support member 40 slides forwards wings 29a and 29b gradually disengage the retaining arms 25a, 25b, the flaps 21,22 are released and spring up into their 20 closed position as shown in figures 13-15 in which they apply a resilient biasing force against a user's finger 50 to secure the finger in place. Lugs 36 engage in slots 53 to retain support member 40 in the writing position.

25 Figures 10 to 12 illustrate the positions of the components through sections A-A, B-B and C-C (see figure 6) when actuating assembly 30 is in the retracted position and figures 13 to 16 illustrate the positions of the components through sections A-A, B-B and C-C

when actuating assembly 30 is moved forward to the in use position.

5 The main part 19 is moulded as a single piece with the flaps 21,22 in their closed position shown in figures 13-15. As a result, when the flaps are pivoted to their flat open position, the springs 24a and 24b are in compression and apply a biasing force tending to force the flaps back into their closed position.

10 To remove the finger, the user raises their first joint, which deforms end cap 35 and releases lugs 36 from slot 53. Support member 40 is biased to the rear of the writing implement by spring 52. As support member 40 moves back wings 29a and 29b engage arms 25a and 24b and as support member 40 slides back the arms 25a, 15 25b are gradually forced up to open the flaps 21 and 22 and release the finger. It will be appreciated that a range of latching mechanisms may be substituted as appropriate.

20 Where in the foregoing description reference has been made to integers or components having known equivalents then such equivalents are herein incorporated as if individually set forth.

25 Although this invention has been described by way of example it is to be appreciated that improvements and/or modifications may be made thereto without departing from the scope or spirit of the present invention.

CLAIMS

1. A writing implement including or adapted to receive a writing element, comprising securing means which provides a resilient
5 biasing force on a finger of a user which is sufficient to secure the writing implement to the user's finger whilst the writing element is used to write.
2. A writing implement according to claim 1 wherein the securing
10 means comprises a base and one or more securing members, each movably mounted to the base so as to move between a closed position in which the securing member(s) apply the resilient biasing force to a user's finger, and an open position in which the user's
15 finger can be removed from the writing implement.
3. A writing implement according to claim 2 wherein the or each
 securing member is rotatably mounted to the base.
4. A writing implement according to claim 3 wherein the or each
20 securing member is integrally formed with the base and rotatable about a biased hinge.
5. A writing implement according to claim 4 wherein the biased
25 hinge is formed so as to resiliently bias the or a respective securing member towards its closed position.
6. A writing implement according to any one of the preceding
 claims comprising a body; and a support movably mounted to the body and adapted to receive the writing element, wherein the

support is movable in an axial direction from a retracted non-writing position to an extended position in which, in use, a tip of the writing element protrudes from the body to facilitate writing.

- 5 7. A writing implement according to any one of the preceding claims further comprising means for retaining the securing means against the resilient biasing force in an open position in which the user's finger can be removed from the writing implement.
- 10 8. A writing implement according to claim 6 and 7 wherein the support retains the securing means in the open position against the resilient biasing force when the support is in its retracted position.
- 15 9. A writing implement according to claim 6 or 8 further including a button coupled to the support, wherein the button is engaged by the user's finger in use and moved forwards in the axial direction to move the support to its extended position, and moved backwards by the user's finger in the axial direction to move the support to its retracted position.
- 20 10. A writing implement as claimed in any one of the preceding claims having a bore formed therein for retaining the writing implement.
- 25 11. A writing element as claimed in any one of claims 6 to 10, when dependent on claim 6, wherein the support has a bore formed therein for retaining the writing element.

12. A writing element as claimed in any one of the preceding claims formed of a resilient plastics material.

13. A writing element substantially as herein described with
5 reference to figures 1 to 5 or figures 6 to 16 of the accompanying drawings.

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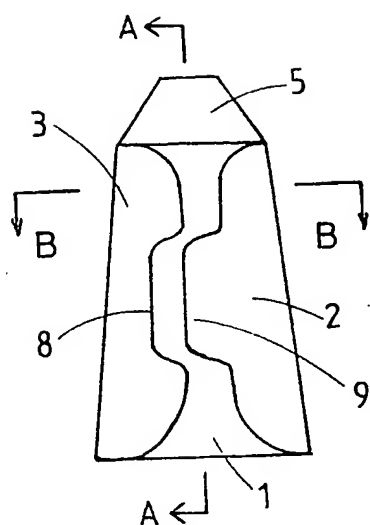


FIG. 1



FIG. 2

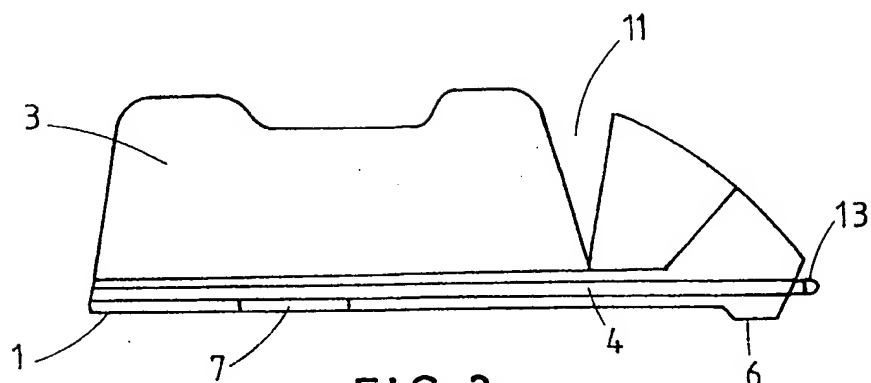


FIG. 3

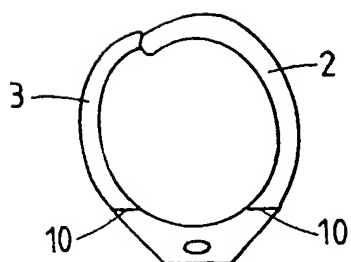


FIG. 4a



FIG. 4b

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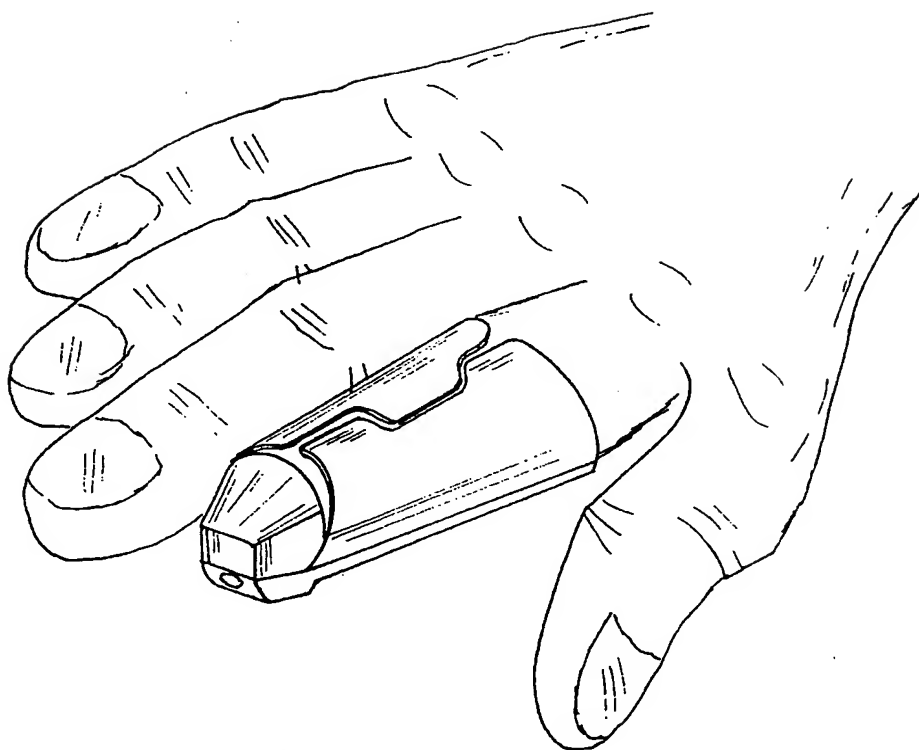
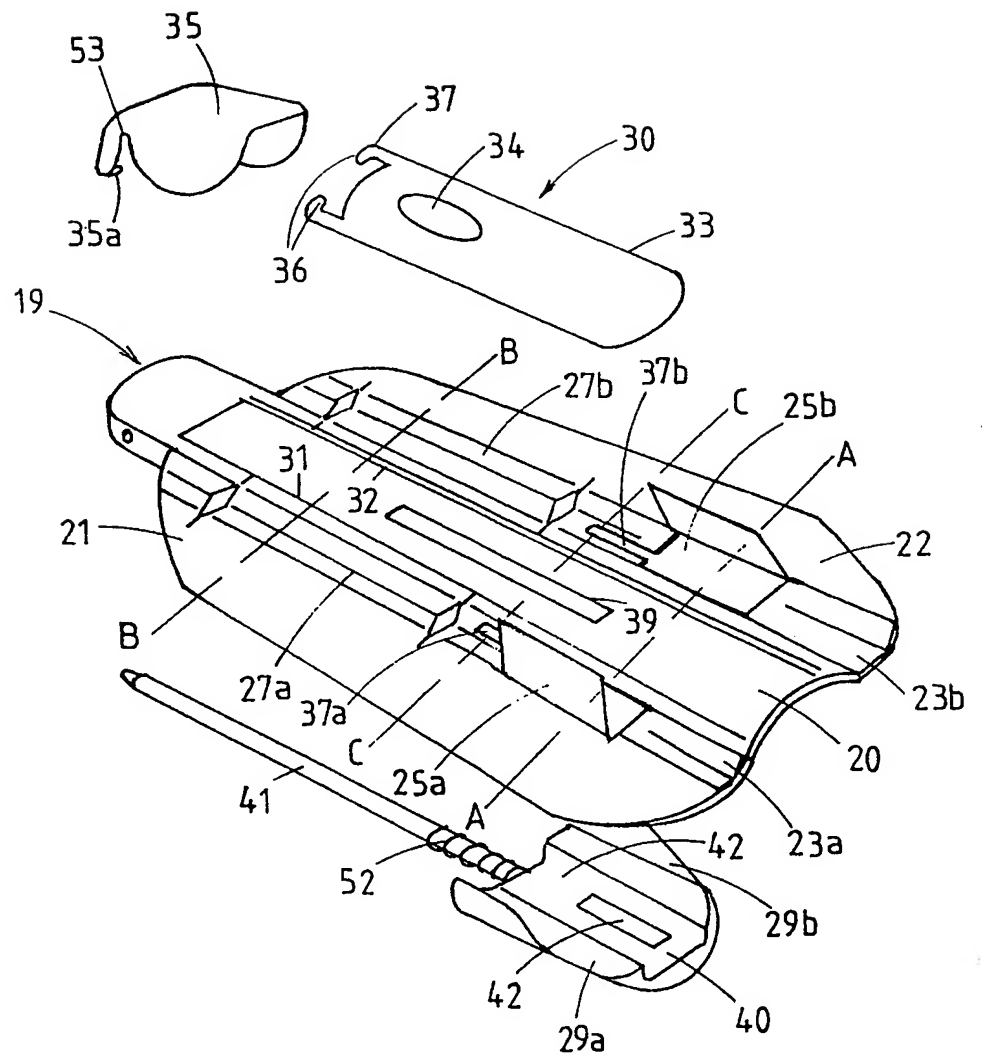
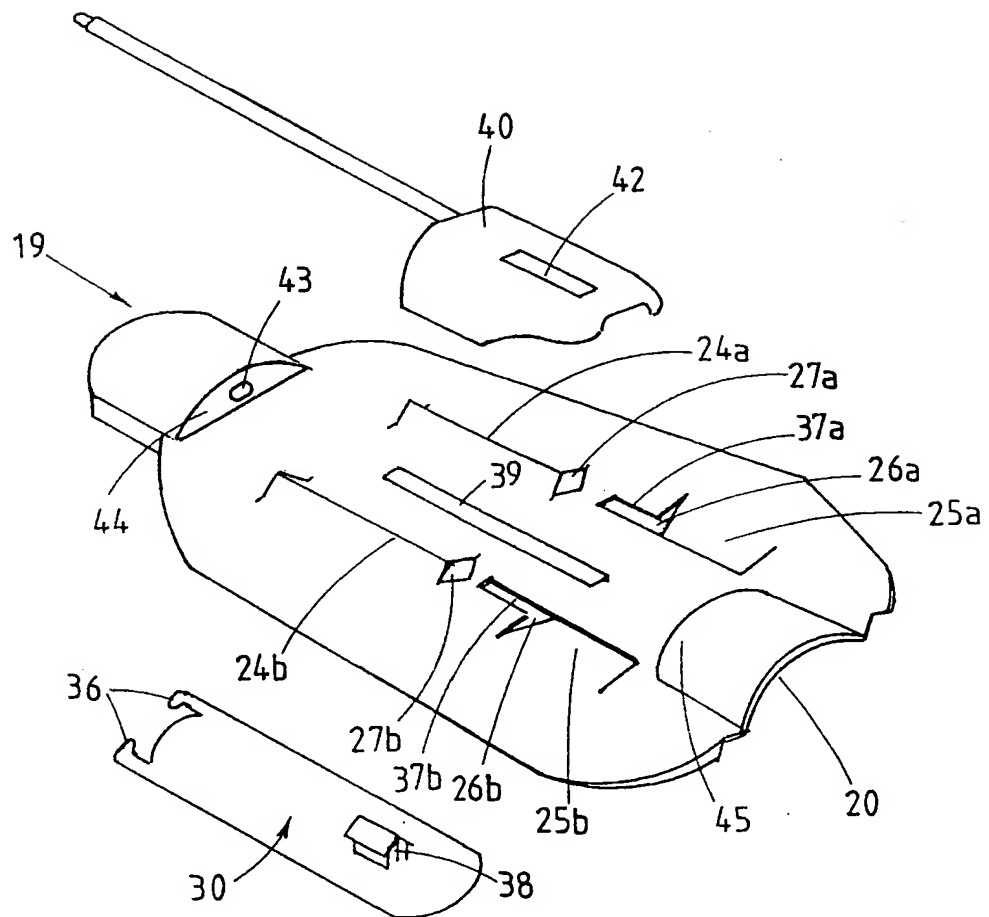


FIG. 5

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FIG. 6

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FIG. 7

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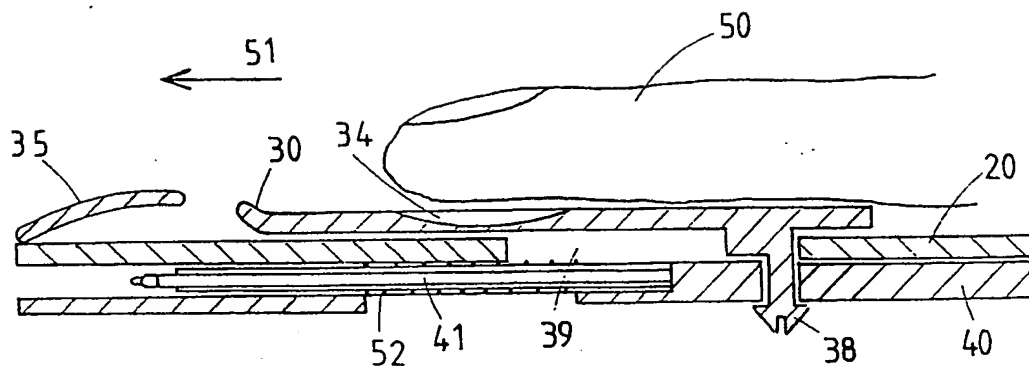


FIG. 8

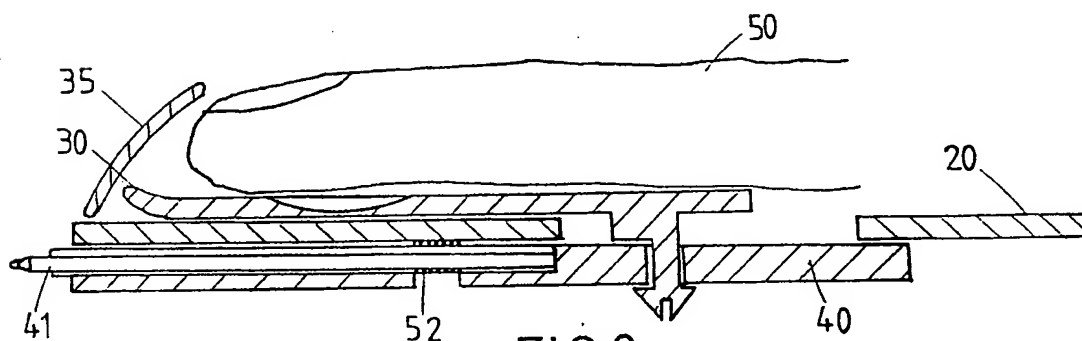


FIG. 9

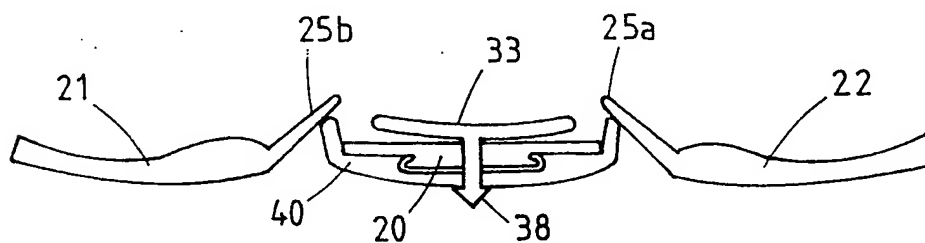


FIG. 10

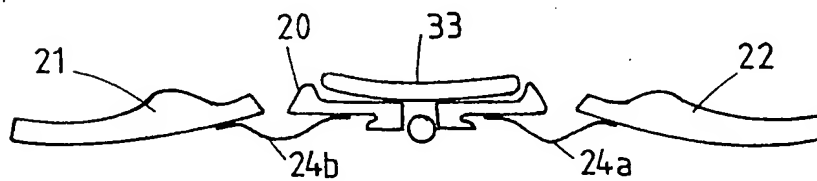


FIG. 11

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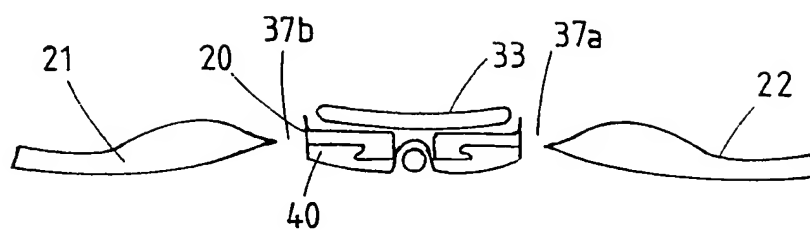


FIG. 12

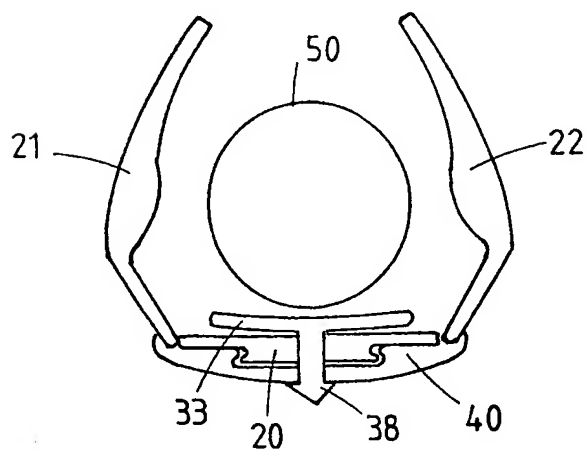


FIG. 13

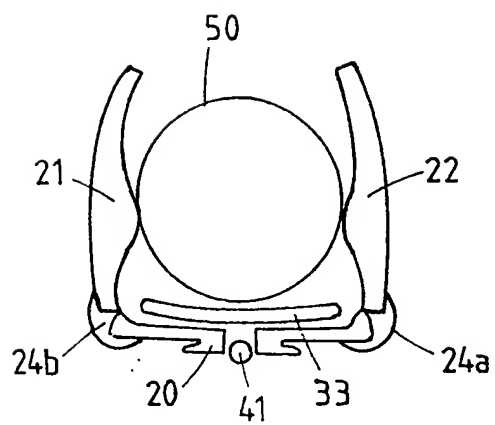


FIG. 14

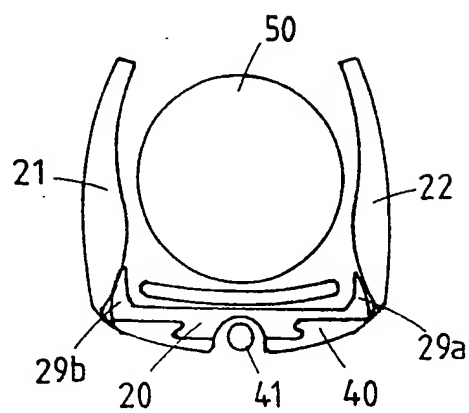
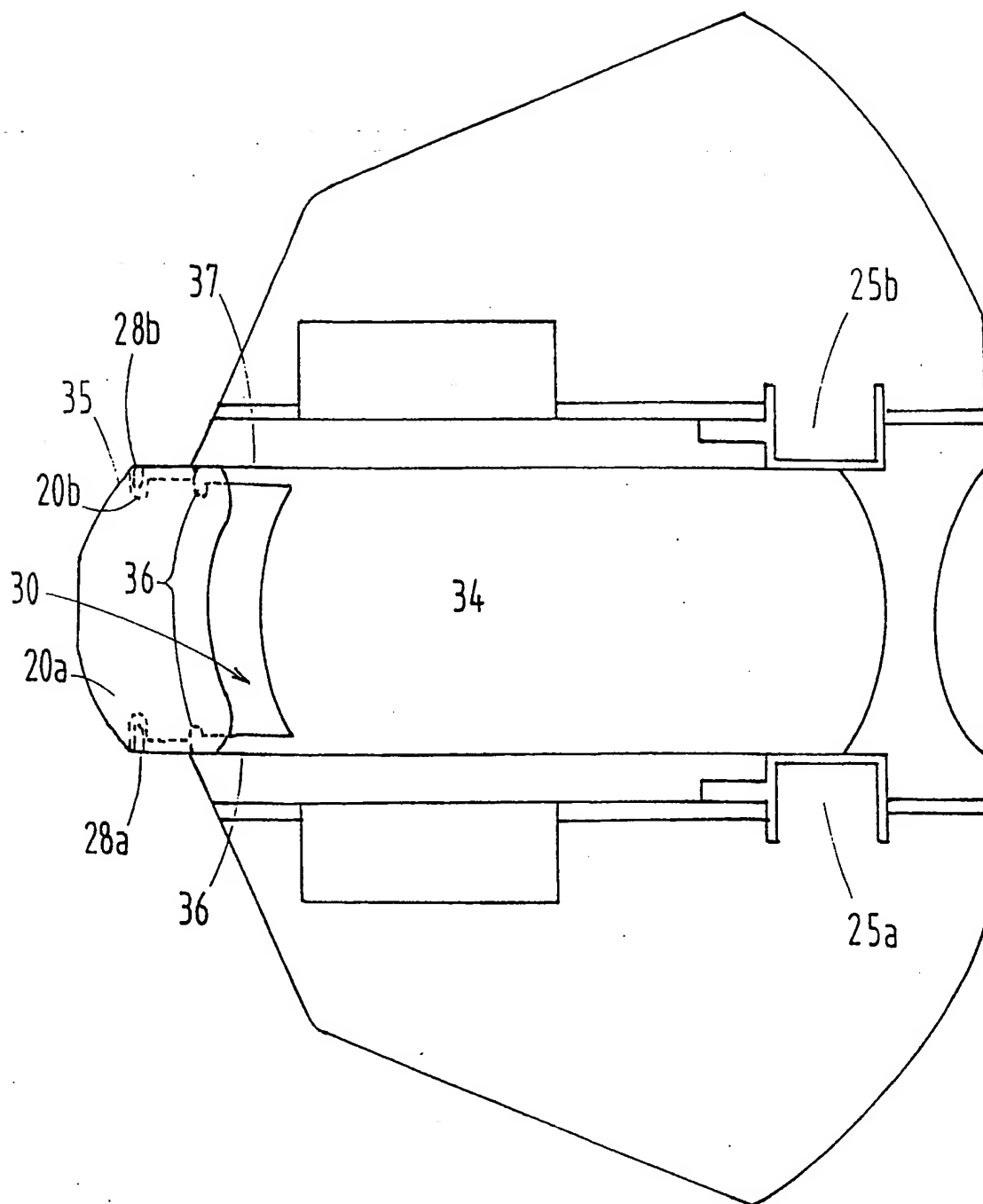


FIG. 15

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FIG.16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NZ 99/00125

A. CLASSIFICATION OF SUBJECT MATTER												
Int Cl ⁶ : B43K 23/012, 23/004, 23/008												
According to International Patent Classification (IPC) or to both national classification and IPC												
B. FIELDS SEARCHED												
Minimum documentation searched (classification system followed by classification symbols) IPC : B43K 23/-												
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU : B43K 23/00, 23/004, 23/008, 23/012												
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT : B43K 23/- and (finger or digit or index or thumb or toe)												
C. DOCUMENTS CONSIDERED TO BE RELEVANT												
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.										
X Y	AU 29737/89 A (LEWIS et al) 10 August 1989 Entire document, in particular, figures 1 and 2, page 5, lines 26-30.	1,10,12,13 2-5										
Y,P	US 5820095 A (STONE) 13 October 1998 Entire document, in particular, figures 5-9 and related description.	2-5										
X Y	WO 97/34771 A (NORTH STAR L.P.) 25 September 1997 Figures, page 2, lines 31-32.	1,10,12,13 2-5										
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex												
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"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone											
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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family											
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Date of the actual completion of the international search 30 November 1999		Date of mailing of the international search report - 7 DEC 1999										
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929		Authorized officer A. ALI Telephone No.: (02) 6283 2607										

INTERNATIONAL SEARCH REPORT

International application No.

PCT/NZ 99/00125

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	FR 2741245 A (ABED) 23 May 1997 Figures 2,3 and abstract	1,10,12,13 2-5
X	Derwent Abstract Accession No. 96-156305/16, Class P77, JP 08039987 A (MITSUBISHI JUKOGYO KK) 13 February 1996 abstract	1,10,12,13
X	Derwent Abstract Accession No. 98-003840/01, Class P77, JP 09272295 A (KONNO) 21 October 1997 abstract	1,10,12,13

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/NZ 99/00125

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report	Patent Family Member
AU 29737/89	NIL
US 5820095	NIL
WO 97/34771	NIL
FR 2741245	NIL
JP 08039987	NIL
JP 09272295	NIL

END OF ANNEX